

LOUISIANA DEPARTMENT OF WILDLIFE & FISHERIES



**OFFICE OF FISHERIES
INLAND FISHERIES DIVISION**

PART VI -A

WATERBODY MANAGEMENT PLAN SERIES

LAKE CONCORDIA

LAKE HISTORY & MANAGEMENT ISSUES

CHRONOLOGY

February 2008 - Prepared by

Mike Ewing, Biologist Manager, District 4

Revised – Evan Thames Biologist Manager, District 4 (2010)

Revised - Richard Moses, Biologist Manager, District 3 (2011)

Lynn Mathews, Biologist Supervisor, District 3 (2011)

Richard McGuffee, Biologist III, District 3, (2011)

TABLE OF CONTENTS

LAKE HISTORY	5
GENERAL INFORMATION	5
<i>Date reservoir formed.....</i>	5
<i>Impoundment.....</i>	5
<i>Size.....</i>	5
<i>Water shed.....</i>	5
<i>Pool stage.....</i>	5
<i>Parish located.....</i>	5
<i>Border waters</i>	5
<i>Drawdown description.....</i>	5
<i>Who controls.....</i>	6
<i>Lake authority.....</i>	6
<i>Association</i>	6
<i>Authorization</i>	6
ACCESS - MAPS WITH LOCATIONS (SEE APPENDIX II)	6
<i>Boat docks</i>	6
<i>Piers.....</i>	6
<i>State/Federal facilities.....</i>	7
<i>Reefs</i>	7
SHORELINE DEVELOPMENT.....	7
<i>State/National Parks.....</i>	7
<i>Shoreline development by landowners.....</i>	7
PHYSICAL DESCRIPTION OF LAKE	7
<i>Shoreline length.....</i>	7
<i>Timber type.....</i>	7
<i>Average depth.....</i>	7
<i>Maximum depth</i>	7
<i>Natural seasonal water fluctuation.....</i>	7
EVENTS / PROBLEMS	7
MANAGEMENT ISSUES	8
AQUATIC VEGETATION	8
<i>Type map</i>	8
<i>Biomass.....</i>	8
<i>Treatment history by year available</i>	8
<i>Biological</i>	8
<i>Chemical.....</i>	8
HISTORY OF REGULATIONS	9
<i>Commercial</i>	9
DRAWDOWN HISTORY	10
<i>Fishing closure</i>	10
FISH KILLS / DISEASE HISTORY, LMBV	10
CONTAMINANTS / POLLUTION.....	10
<i>Water quality</i>	10
<i>Water Level.....</i>	10
BIOLOGICAL-	11
<i>Fish samples</i>	11
<i>Lake records</i>	12
<i>Stocking History</i>	12
<i>Species profile.....</i>	13
<i>Genetics</i>	15
<i>Threatened/endangered/exotic species</i>	15
CREEL-	16
<i>Current methods</i>	16

<i>Hydrological changes –</i>	16
WATER USE	16
<i>Hunting</i>	16
<i>Recreational water sports</i>	16
<i>Fishing</i>	16
<i>Swimming</i>	16
<i>Irrigation</i>	16
APPENDIX I –	17
APPENDIX II-	19
APPENDIX III –	20

LAKE HISTORY

General Information

Date reservoir formed

Lake Concordia is a natural lake formed when the Mississippi River changed its course prior to recorded history (dates back to first Spanish explorers).

Impoundment

Lake Concordia was permanently cut off from river influence when the Mississippi River mainline levees were built by the U. S. Army Corps of Engineers following the Flood Control Act of 1927.

Ownership - State of Louisiana owns the water bottoms and the Louisiana Department of Wildlife & Fisheries (DWF) manages the fish and wildlife resources.

Size

1,100 acres

Water shed

5,702 acres

Pool stage

48.5 ft.

Parish located

Concordia; Lat. 31°40'25" N, and Long. 91°30'05" W; T. 8N, R.9E.

Border waters

NONE

Drawdown description

Time to achieve drawdown – approximately 40 days

Spillway

Original Outlet Structure was built in 1948 and had one 4' diameter pipe with an invert elevation of 46.0 ft. MSL. It was replaced with a second structure, built in 1975 that has one 5' pipe with invert at 42.0 ft. MSL and concrete weir with one 5'x5' gate to raise elevation to 48.5 ft. MSL with gate closed.

Condition – Good

Flow rate – approximately 200 cubic feet per second

Sluiceway-

None

Who controls

The Concordia Parish Police Jury is the duly authorized entity which operates and maintains the water control structure.

Lake authority

There is no state-authorized Lake Commission.

Concordia Parish Police Jury passed a resolution on August 25, 1975 requesting the Department of Public Works, State of Louisiana prepare the plans and furnish the engineering supervision and provide funding to construct a control structure in the Cocodrie Outfall Channel for Lake Concordia in Concordia Parish, Louisiana. In return, the Police Jury will and hereby does assume complete responsibility for the operation, maintenance and upkeep of the control structure upon completion of the project. To review the complete resolution, see Appendix I.

Association

Lake Concordia Advisory Committee appointed by Concordia Parish Police Jury
Members appointed August 28, 2006:

James W. King
Ronnie Hendricks
Johnny Patrick
William Hall
Joe Ardoin

Authorization

Parish government under state law can select/appoint a panel of interested/concerned citizens to serve on committees in an advisory capacity to the jury. The Lake Concordia Advisory Committee fills that role with respect to fish and wildlife issues in Concordia Parish.

Access - maps with locations (see Appendix n)

- 1 – Old LDWF District 4 Office ramp (public) – Lat. 31°40'25" N; Lon. 91°29'58" W
- 2 – Sportsman's Lodge (commercial) – Lat. 31°38'06" N; Lon. 91°32'37" W
- 3 - Oak Harbor RV Park (commercial) – Lat. 31°37'31" N; Lon. 91°32'37" W
- 4 - Lakeview Lodge (commercial) – Lat. 31°37'02" N; Lon. 91°31'45" W

Boat docks

Sportsman's Lodge (commercial)
Lakeview Lodge (commercial)

Piers

Numerous private piers are located on the lake

State/Federal facilities

LDWF District IV Office was once located on the southwest shore of the lake. However, this facility was closed in 2009.

Reefs

Two LDWF artificial reefs were placed in Lake Concordia on either side of a deep area known as the “blue-hole” and are marked with buoys at Latitude and Longitude:

Reef # 1 - 31° 40' 7.8" N; 91° 30' 30.8" W

Reef # 2 - 31° 40' 4.6" N; 91° 30' 35.2" W

Shoreline development

Lake Concordia is developed with private residences along 60% of the shoreline, with the remainder in agriculture (row crops and pasture).

State/National Parks

NONE

Shoreline development by landowners

Private residences with piers and boat houses, and agricultural fields.

Physical description of lake

Shoreline length

17.8 miles

Timber type

Cypress is located around the entire fringe of the lake.

Average depth

20 ft.

Maximum depth

50 ft.

Natural seasonal water fluctuation

Generally water levels fluctuate around 3 feet per year.

Events / problems

- 1) Bass Clubs host numerous tournaments which primarily occur in the spring and fall of the year.
- 2) There is an ongoing debate concerning the ideal elevation of the water level. There is a general consensus among bass fishermen that higher water levels are better for bass production. However many of the home/camp owners along the shoreline do not like high water levels because wakes created by water craft damage piers and boat houses.

MANAGEMENT ISSUES

Aquatic Vegetation

Historically aquatic vegetation has never caused serious problems. Submerged vegetation, primarily coontail (*Ceratophyllum demersum*) occurs in the flats at the north end of the lake; water hyacinth (*Eichornia crassipes*) occurs in the flats at both ends of the lake. Bald Cypress (*Taxodium distichum*) trees line most of the shoreline and extend out into the lake. Cypress trees cover about 10% of the total surface acreage of the lake. Currently vegetation is not a problem on Lake Concordia. A few small patches of common salvinia (*Salvinia minima*) have been found in the past, but were treated and are not a threat at this time. Presently, total vegetation coverage is less than 5% of the lakes surface area.

Type map

Due to complaints from local users type mapping was conducted in 1989 by Louie Richardson, an LDWF Aquatic Habitat Biologist. The only significant vegetation found was Southern Naiad (*Najas guadalupensis*). It was treated in late summer and has not been a problem species since.

A type map survey was conducted on Lake Concordia in 2005 and approximately 10 % coverage of aquatic vegetation was found. Submerged weeds included coontail, southern naiad, bladderwort (*Utricularia* sp.) and filamentous algae. Floating vegetation was identified as water hyacinth, alligator weed (*Alternanthera philoxeroides*) and water primrose (*Ludwigia* sp.). Emergent vegetation along the shoreline was primarily giant cutgrass (*Zizaniopsis miliacea*).

See Appendix III for Vegetative Type Maps.

Biomass

No biomass sampling has been conducted.

Treatment history by year available

Biological

Salvinia weevils (*Cyrtobagous salviniae*) were released in 2007 to help control common salvinia. There is no evidence a population of the weevils has survived. There was no common salvinia or evidence of the weevils in the lake as of the spring of 2010. In the fall of 2011 no common salvinia was observed in the lake.

Chemical

LDWF spray crews utilize contact herbicide applications as periodic complaints are received from the public. A few residential complaints about giant cutgrass (*Zizaniopsis miliacea*) along the shoreline have been sprayed with ecoimazapyr. For a complete summary of herbicide applications see Table 1.

Table 1. Herbicide applications in Lake Concordia, Louisiana, from 2005 to 2010.

Year	Gallons	Pounds	Acres	Vegetation
2005	12.50		25	Water Hyacinth, Pennywort
2009	20.00		40	Water Hyacinth, Pennywort
2010	55.50		100	Water Hyacinth, Alligator weed, Giant Cutgrass

History of regulations

Recreational – Recreational fishing is currently regulated under statewide regulations.

A 15”- 19” slot limit on black bass was in effect on Lake Concordia from 1991-2001. In 2001, area bass fishermen circulated a petition to have the slot regulation removed. Subsequent review of age and growth data showed a decline in growth rates of bass during the years when the slot limit was in effect. LDWF took the appropriate action to have the size restriction removed in 2002. Since that time, age and growth data have shown bass growth rates have improved.

Statewide regulations

Black Bass (Largemouth, spotted): 10 daily of any size

Buffalo Fish or their hybrids: 16 inch min. total length limit, 25 per day

Freshwater Drum (Gaspergou): 12 inch min. total length limit, 25 per day

Bowfin (Choupique, Grinnell): 16 inch min. total length limit

Channel Catfish: 11 inch min. total length limit (see Catfish below for possession limit)

Blue Catfish: 12 inch min. total length limit (see Catfish below for limit)

Flathead Catfish: 14 inch min. total length limit (see Catfish below for limit)

Catfish (Blue, Channel and Flathead): the possession limit for catfish caught on a recreational license shall be 100. The 100 fish may be a single species, or a combination of blue, channel or flathead catfish. Within the 100 fish possession limit, a recreational angler may possess a maximum of 25 undersize catfish of a single or combination of all 3 species.

Crappie: 50 daily

White Bass: 50 daily

Yellow Bass: 50 daily

Commercial

In September 1991 the Louisiana Wildlife and Fisheries Commission prohibited the use of gill nets, trammel nets and fish seines in Lake Concordia. (Promulgated in acc. With R.S. 56:22(B))

Commercial Size Limits:

Buffalo – 16 inches minimum total length
Bowfin – 22 inches minimum total length
Blue Catfish – 12 inches minimum total length
Channel Catfish – 11 inches minimum total length
Flathead Catfish – 14 inches minimum total length
Freshwater Drum – 12 inches minimum total length

A complete list of commercial regulations can be found in the Louisiana Commercial Fishing Regulations Pamphlet or online at the LDWF website listed below:

http://www.wlf.louisiana.gov/sites/default/files/pdf/publication/31745-commercial-fishing-regulations/commercial_fishing_2011.pdf

Drawdown history

Lake Concordia has never had a drawdown

Fishing closure

NONE

Fish kills / Disease History, LMBV

LMBV was confirmed to be present in 2001, when a minor fish kill occurred; there have been occasional low dissolved oxygen related fish kills of most species, primarily in late summer. No severe fish kills have occurred.

Contaminants / pollution

Currently there are no fish consumption advisories for Concordia Lake. However, annual updates can be found at the DEQ link below.

URL to DEQ website if available – www.deq.louisiana.gov

Water quality

Water quality is generally good (moderately eutrophic). Dense algal blooms in mid to late summer are becoming more common in recent years as new house construction on the lake shoreline has increased dramatically in the last decade, leading to increased nutrient inflow from septic systems, lawn fertilizers, etc.....

Water Level

Normal pool stage is 48.5 ft. MSL. Water levels appeared to stay below pool through most of 2006-2007 and 2010-2011 due to lower than normal rainfall. There is no recording water level gauge on the lake.

Biological-

Fish samples

History - Lake Concordia was sampled seven times with rotenone between 1986 and 1997; since the early 1990's it has been sampled annually by electro-fishing, gill netting and shoreline seining. The complete sampling history is found in table 2.

Table 2. Fish sampling on Lake Concordia, Louisiana, from 1986 until present.

LAKE CONCORDIA SAMPLING	
1986	Rotenone - 2 sets
1987	Rotenone - 2 sets
1988	Rotenone - 2 sets
1989	Rotenone – 2 sets; Electrofishing – 4 stations (fall)
1990	Electrofishing – 4 (spring & fall); seine samples – 4
1991	Electrofishing – 4 stations in spring & 3 in fall; seine – 3
1992	Rotenone – 2 sets; Electrofishing – 4 (spring & fall); seine – 3
1993	Electrofishing – 4 (spring & fall); seine – 3
1994	Electrofishing – 4 (spring & fall); seine – 3; gill net – 1
1995	Rotenone – 2; Electrofishing – 4 (spring & fall); seine – 3
1996	Electrofishing – 4 (spring & fall); seine – 3
1997	Rotenone – 3; Electrofishing – 4 (spring & fall); seine – 3; gill net – 3
1998	Electrofishing – 4 (spring & fall); seine – 3; gill net - 3
1999	Electrofishing – 4 (spring & fall); seine – 3; gill net – 3
2000	Electrofishing – 4 (spring & fall); seine – 3
2001	Electrofishing – 4 (spring & fall); seine – 3; gill net – 3
2002	Electrofishing – 4 (spring & fall); seine – 3
2003	Electrofishing – 4 (spring & fall); seine – 3; gill net – 3
2004	Electrofishing – 4 (spring & fall); seine – 3
2005	Electrofishing – 4 (spring & fall); seine – 3; gill net – 3
2006	Electrofishing – 4 (spring & fall); seine – 3
2007	Electrofishing – 4 (spring & fall); seine – 3
2008	Electrofishing – 4 (spring & fall); seine – 3

2009	Electrofishing – 4 (spring & fall); seine – 3
2010	Electrofishing – 4(summer- Age and Growth / Mortality)
2011	Electrofishing – 4 (spring & fall –Age and Growth / Mortality)

Lake records

No official records are kept for Lake Concordia.

Stocking History

Fish stocking began in 1977 in Lake Concordia when hybrid striped bass were introduced. Hybrid striped bass were stocked annually for the next sixteen years from 1977 until 1992. Since then hybrid striped bass have been stocked sporadically. Florida LMB stocking began in 1989 and were stocked annually until 2003. Florida LMB stocking continues periodically. See Table 3 below.

Table 3. Fish stocking records for Lake Concordia, Louisiana, from 1977 until present.

YEAR	HYBIRD SPRIPED BASS	FLORIDA LARGEMOUTH BASS
1977	10,000	
1978	10,000	
1979	10,540	
1980	10,000	
1981	10,000	
1982	10,522	
1983	10,000	
1984	10,000	
1985	10,000	
1986	15,000	
1987	10,000	
1988	10,000	
1989	10,000	10,000
1990	5,900	109,000
1991	10,516	100,750
1992	10,000	101,894
1993		80,250
1994	160,000 fry	108,308
1995	100,000 fry	155,500 fry
1996		100,000
1997		100,000
1998		100,000

1999		100,000 fry/120,000 fingerlings
2000		96,380
2001		104,460
2002	11,400	101,274
2003		10,036
2004		
2005	10,949	11,184
2006	11,684	
2007	11,001	11,036
2008		
2009	10,874	851 Phase II
2010		47,015

Species profile

As per Freshwater Fishes of Louisiana by Dr. Neil H. Douglas, fish species listed below have been collected or are likely to occur in Lake Concordia.

FRESHWATER FISHES CONCORDIA LAKE

Lamprey Family, PETROMYZONTIDAE

Southern brook lamprey, *Ichthyomyzon gagei* Hubbs and Trautman
Chestnut lamprey, *Ichthyomyzon castaneus* Girard

Gar Family, LEPISOSTEIDAE

Spotted gar, *Lepisosteus oculatus* (Winchell)
Longnose gar, *Lepisosteus osseus* (Linnaeus)
Shortnose gar, *Lepisosteus platostomus* Rafinesque
Alligator gar, *Atractosteus spatula* (Lacepede)

Bowfin Family, AMIIDAE

Bowfin, *Amia calva* Linnaeus

Herring Family, CLUPEIDAE

Gizzard shad, *Dorosoma cepedianum* (Lesueur)
Threadfin shad, *Dorosoma petenense* (Günther)

Minnow Family, CYPRINIDAE

Blacktail shiner, *Cyprinella venustus* (Girard)
Common Carp, *Cyprinus carpio* Linnaeus
Cypress minnow, *Hybognathus hayi* Jordan
Striped shiner, *Luxilus chrysocephalus* Rafinesque
Golden shiner, *Notemigonus crysoleucas* (Mitchill)
Emerald shiner, *Notropis atherinoides* Rafinesque

Taillight shiner, *Notropis maculatus* (Hay)
Weed shiner, *Notropis texanus* (Girard)
Mimic shiner, *Notropis volucellus* (Cope)
Bullhead minnow, *Pimephales vigilax* (Baird and Girard)
Creek chub, *Semotilus atromaculatus* (Mitchill)

Sucker Family, CATOSTOMIDAE

Lake chubsucker, *Erimyzon sucetta* (Lacépède)
Smallmouth buffalo, *Ictiobus bubalus* (Rafinesque)
Bigmouth buffalo, *Ictiobus cyprinellus* (Valenciennes)
Black buffalo, *Ictiobus niger* (Rafinesque)
Spotted sucker, *Minytrema melanops* (Rafinesque)

Freshwater Catfish Family, ICTALURIDAE

Black bullhead, *Ameiurus melas* (Rafinesque)
Yellow bullhead, *Ameiurus natalis* (Lesueur)
Tadpole madtom, *Noturus gyrinus* (Mitchill)
Channel Catfish, *Ictalurus punctatus* (Rafinesque)
Flathead Catfish, *Pylodictis olivaris* (Rafinesque)

Pike Family, ESOCIDAE

Grass pickerel, *Esox americanus vermiculatus* (Lesueur)
Chain pickerel, *Esox niger* (Lesueur)

Pirate Perch Family, APHREDODERIDAE

Pirate perch, *Aphredoderus sayanus* (Gilliams)

Killifish Family, CYPRINODONTIDAE

Golden topminnow, *Fundulus chrysotus* (Günther)
Starhead topminnow, *Fundulus nottii* (Agassiz)
Blackstripe topminnow, *Fundulus notatus* (Rafinesque)
Blackspotted topminnow, *Fundulus olivaceus* (Storer)

Livebearer Family, POECILIIDAE

Western mosquitofish, *Gambusia affinis* (Baird and Girard)

Silverside Family, ATHERINIDAE

Brook silverside, *Labidesthes sicculus* (Cope)
Mississippi silverside, *Menidia audens* (Hay)

Temperate Bass Family, PERCICHTHYIDAE

White bass, *Morone chrysops* (Rafinesque)
Yellow bass, *Morone mississippiensis* Jordan and Eigenmann
Hybrid Striped bass, *Morone chrysops* X *M. saxatilis*

Sunfish Family, CENTRARCHIDAE

Banded pygmy sunfish, *Elassoma zonatum* (Jordan)
 Green sunfish, *Lepomis cyanellus* (Rafinesque)
 Warmouth, *Lepomis gulosus* (Cuvier)
 Orangespotted sunfish, *Lepomis humilis* (Girard)
 Bluegill, *Lepomis macrochirus* (Rafinesque)
 Dollar sunfish, *Lepomis marginatus* (Holbrook)
 Longear sunfish, *Lepomis megalotis* (Rafinesque)
 Redear sunfish, *Lepomis microlophus* (Günther)
 Redspotted sunfish, *Lepomis miniatus* (Valenciennes)
 Bantam sunfish, *Lepomis symmetricus* (Forbes)
 Florida largemouth bass, *Micropterus floridanus* (Lacépède)
 Northern largemouth bass, *Micropterus salmoides* (Lacépède)
 White crappie, *Pomoxis annularis* (Rafinesque)
 Black crappie, *Pomoxis nigromaculatus* (Lesueur)

Perch Family, PERCIDAE

Bluntnose darter, *Etheostoma chlorosomum* (Hay)
 Swamp darter, *Etheostoma fusiforme* (Girard)
 Slough darter, *Etheostoma gracile* (Girard)
 Cypress darter, *Etheostoma proeliare* (Hay)
 Logperch, *Percina caprodes* (Rafinesque)

Drum Family, SCIAENIDAE

Freshwater drum, *Aplodinotus grunniens* Rafinesque

Pipefish Family, Syngnathidae

Gulf pipefish, *Syngnathus scovelli* Evermann and Kendall

Genetics

Genetic testing was first conducted in 1994 and has been conducted periodically to 2006. Significant numbers of LMB contain Florida genes. See Table 5 below.

Table 5. Record of genetic testing in Concordia Lake, Louisiana from 1994 to 2006.

Year	% Northern	% Florida	% Hybrid	% Florida Influence
1994	87	4	9	13
1995	80	3	17	20
1997	65	5	30	35
1999	62	4	34	38
2002	71	3	26	29
2005	73	5	22	27
2006	72	5	23	28

Threatened/endangered/exotic species

None; species of interest – a landlocked population of Gulf pipefish, *Syngnathus scovelli* occurs in Lake Concordia, and are occasionally collected or reported.

Creel-

Current methods

Access Point Creel Surveys were conducted on Lake Concordia in 1990, 1991, 1994, 1996, 1997, 1998, 2002, 2003 and 2010.

Hydrological changes –

Lake Concordia was completely cut off from flood water exchange with the Mississippi River with the construction of federal flood control levees in the 1920's.

Water Use

Hunting

Hunting is limited due to residential development along the shoreline. Although several duck blinds are located in the extreme upper end of the lake; various waterfowl species can be observed on the lake during winter.

Recreational water sports

Recreational water sports are very popular on Concordia Lake and include water skiing, jets skis, party barges, sail boats and other recreational boats. The extreme ends of the lake are heavily covered with cypress trees and stumps, but the main body of the lake is free of obstructions for skiers and recreational boaters.

Fishing

Concordia Lake is utilized extensively for recreational fishing -- primarily for largemouth bass. Numerous bass tournaments are held annually. Commercial fishing for channel catfish is conducted by a small number of fishermen who primarily fish small hoop nets.

Swimming

YES

Irrigation

Agriculture irrigation does occur and several pumps were observed in the lake during the summer/fall of 2011. The volume of water drawn from the lake is not monitored.

Appendix I -

Water Control Structure Authority

RESOLUTION

CONCORDIA PARISH POLICE JURY

WHEREAS, at the request of this Police Jury, the Department of Public Works, State of Louisiana, has made a preliminary survey and an estimate of the cost of constructing a control structure in the Cocodrie Outfall Channel for Lake Concordia in Concordia Parish;

WHEREAS, this Police Jury has no funds available with which to finance the construction itself, but can and will make all utility and other relocations made necessary by the project;

WHEREAS, all necessary servitudes and rights-of-way have been acquired by this Police Jury and the titles thereto are valid and indefeasible.

NOW, THEREFORE, BE IT RESOLVED by the Concordia Parish Police Jury in regular session assembled on this 25th day of August, 1975, that the Department of Public Works, State of Louisiana, be and hereby is requested to prepare the plans and specifications, award a contract in its own name and at its own expense for the construction of the said control structure, and furnish the engineering supervision during the progress of the work.

BE IT RESOLVED that said Department of Public Works be and hereby is assured that all necessary servitudes and rights-of-way have been acquired by this Police Jury and the titles thereto are valid and indefeasible, and that this Police Jury will and hereby does assume complete responsibility for the operation, maintenance and upkeep of the control structure upon completion of the project.

BE IT RESOLVED that this Police Jury does hereby agree to remove, for the duration of the work and thereafter replace, the two house trailers at the south end of the right-of-way, the water line, the gas line and the hurricane wire fence which must be temporarily relocated to accommodate the project, and to reconstruct the base and surface of the roadway and ramps after the project is completed.

BE IT RESOLVED that said Police Jury does hereby agree to save and hold the said Department of Public Works, its officers, agents and employees, harmless from any liability or claim for damages arising out of the project, or the failure of any servitude or right-of-way, including, but not limited to, liability or claim for damages arising out of the negligence of said Department, its officers, agents or employees, and agree to defend any suit brought against the Department as a result of this project.

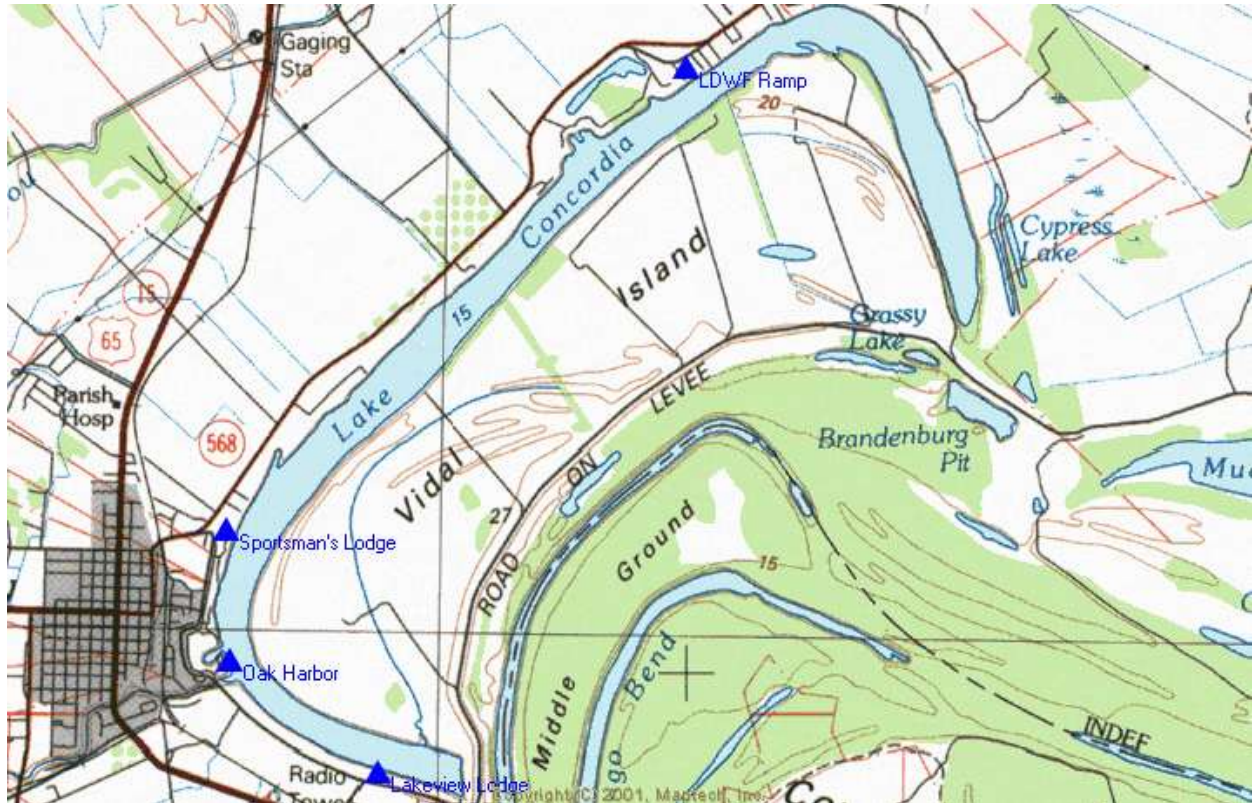

SECRETARY


PRESIDENT

Copies of this Resolution will be mailed to the Louisiana Department of Public Works Offices in Baton Rouge, Monroe, and Ferriday, LA.

Appendix II-

Boat Ramp Locations



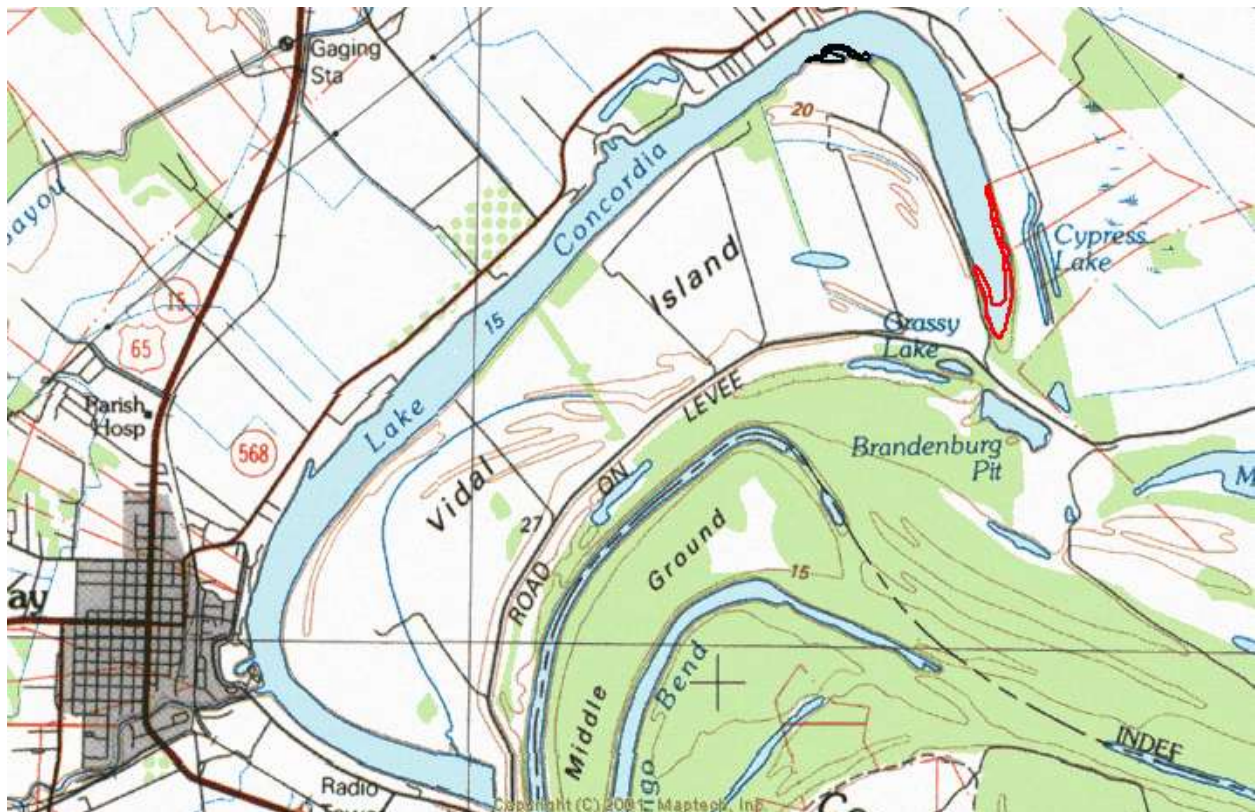
APPENDIX III –

VEGETATION TYPEMAP

2005 Lake Concordia Aquatic Vegetation Type Map

Dave Hickman

Lake Concordia was about 2 feet below pool stage at the time of the survey in late summer of 2005. The northeast end of the lake was covered in a mixture of coontail and southern naiad from shore to a depth of about 3 feet. Two shallow (< 3 feet) coves and a point on the inside bend of the lake were partially covered in southern naiad. There were a small number of water hyacinths scattered throughout the lake.



Red highlight = 28 ac, 100% coverage: ½ coontail; ½ southern naiad

Black highlight = 8 ac, 50% coverage: southern naiad